REMARKS

Applicant thanks the Examiner for acknowledging Applicant's claim to foreign priority under 35 U.S.C. § 119(a)-(d), and for confirming that the certified copy of the priority document has been received.

Drawings:

Applicant thanks the Examiner for indicating that the drawings filed with the present application have been accepted.

Claim Rejections:

Claims 1-20 are all the claims pending in the application, and currently all of the claims stand rejected.

35 U.S.C. § 112, 2nd Paragraph Rejection - Claims 11-16:

Claims 11-16 stand rejected under 35 U.S.C. § 112, 2nd paragraph as being indefinite. Applicant has amended claim 11 as shown in the attached Appendix to address the Examiner's concern. In view of this amendment, Applicant hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 112, 2nd paragraph rejection of the above claims.

Further, Applicant submits that the above referenced amendment has been made to merely clarify the claimed invention, and are not intended to narrow the scope or spirit of the original claim in any way.

35 U.S.C. § 102(b) Rejection - Claims 1, 8 and 9:

Claims 1, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,483,827 to Kulka et al. In view of the following discussion, Applicant respectfully disagrees.

Contrary to the Examiner's assertions, Applicant respectfully submits that Kulka fails to disclose, teach or suggest wear forecasting of tire tread based on an increase in temperature of a part of the tread surface or based on a temperature of a tread surface part after the temperature of the tread surface part is increased. Specifically, Kulka only discloses having a tire sensor in the tire structure, or on the inner wall of the tire (see Figures 7 and 8), and as such the system in Kulka is incapable of measuring the tread surface temperature of the tire.

In the present invention, the tire tread wear is forecasted based on the temperature of a part of the tread surface or based on the temperature of a tread surface part after increasing the temperature of a tread surface part. This is in no way disclosed in Kulka.

Therefore, in view of the above discussion, Applicant respectfully submits that Kulka fails to disclose each and every feature of the present invention, as set forth and recited in claim 1, and hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 102(b) rejection of this claim. Further, as claims 8 and 9 depend on claim 1, Applicant submits that these claims are also allowable, at least by reason of their dependence.

35 U.S.C. § 102(b) Rejection - Claims 1, 7, 9-11 and 17-18:

Claims 1, 7, 9-11 and 17-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,807,226 to Williams. In view of the following discussion, Applicant respectfully disagrees.

As with Kulka, Applicant respectfully submits that Williams fails to disclose a method or apparatus for determining tread wear on a tire based on the temperature of a part of the tread surface. Williams is directed to only determining whether or not faults exist in a manufactured

tire. *See* Williams, col. 4, lines 44-54. Williams states that a "signal apparatus receives the sensor output and provides an alarm signal in response to excessive amounts of infrared radiation indicating a localized defect or fault in the tire." *Id.* at col. 2, lines 1-4. Throughout Williams it is clear that the disclosed device can only detect faults in a tire. There is no disclosure, whatever, of being able to forecast tread wear of a tire, as set forth in the present application.

In the above referenced Office Action, the Examiner seems to equate "faults" with "wear", as set forth in the claims of the present application. *See* Office Action, page 4. Applicant submits that this is an impermissibly broad interpretation of the term "fault" in Williams. Applicant notes that at col. 4, line 51, Williams refers to "faults in the tire **22**." (Emphasis added). Applicant submits that one of ordinary skill in the art would not equate the detection of faults in a tire to the forecasting of tire tread wear, and that the Examiner's interpretation of the term "wear" is impermissibly broad.

In view of the above discussion, Applicant respectfully submits that Williams fails to disclose each and every feature of the claimed invention as set forth in claims 1 and 11, and hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 102(b) rejection of these claims. Further as claims, 7, 9-10, and 17-18 depend on claims 1 and 11, respectively and submits that these claims are also allowable, at least by reason of their dependence.

35 U.S.C. § 103(a) Rejection - Claims 2-4:

Claims 2-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Kulka reference. However, since claims 2-4 depend on claim 1, Applicant submits that these claims are also patentable, for at least the reasons set forth above regarding claim 1 and the Kulka reference.

35 U.S.C. § 103(a) Rejection - Claims 5-6:

Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Kulka reference in view of U.S. Patent No. 4,995,197 to Shieh et al. However, since claims 5 and 6 depend on claim 1, and because Shieh fails to cure the deficient teachings of Kulka with respect to claim 1, Applicant submits that these claims are also patentable, at least by reason of the dependence.

35 U.S.C. § 103(a) Rejection - Claims 11-14 and 19-20:

Claims 11-14 and 19-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,088,321 to Kajikawa et al. in view of U.S. Patent No. 3,854,336 to Bibby. In view of the following discussion, Applicant respectfully disagrees.

The Examiner asserts that Kajikawa discloses all of the features of the present invention set forth in claim 11, except the "means for measuring." To cure this deficiency the Examiner relies on Bibby, which discloses using radiometers **1** and **2** to detect thermal emissions from a tire without making contact with the tire. The Examiner asserts that it would have been obvious to combine the radiometers in Bibby with the system in Kajikawa. However, Applicant disagrees with the Examiner.

As an initial matter, Applicant notes that Kajikawa discloses a method and system of observing the ground contact being made by a tire on a fictitious road surface. Kajikawa only discloses observing and capturing the area and configuration of the tread making contact with the road surface. There is no disclosure, whatever, regarding determining the tread wear on a portion of the tire tread. There is no teaching or suggestion of having the apparatus in Kajikawa

being capable of forecasting tread wear, based on any variable, let alone the use of surface temperature at a portion of the tread.

Further, Applicant notes that with regard to the Bibby reference, there is no disclosure, teaching or suggestion of a "means for measuring, without contact, the temperature of the tread surface part and for discerning a temperature distribution of the tread surface part from the measured temperature." *See* claim 11. Specifically, although Bibby discloses measuring a tire temperature, there is no disclosure or teaching of discerning a temperature distribution of the tread surface part from the measured temperature, as recited in claim 11.

With regard to claim 19, Applicant notes that neither of the Kajikawa or Bibby references, either individually or in combination, discloses, teaches or suggests "a computer which forecasts tread wear on the tire based on the temperature sensed by said sensor." *See* claim 19. As stated above, there is no disclosure whatever regarding the forecasting of tread wear based on a sensed temperature, in either of the cited references.

It is for at least these reasons, set forth above, that Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 11 and 19, and hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 103(a) rejection of these claims. Further, as claims 12-14 and 20 depend on these claims, respectively, Applicant submits that these claims are also allowable, at least by reason of their dependence.

35 U.S.C. § 103(a) Rejection - Claims 15 and 16:

Claims 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kajikawa in view of Bibby, in further view of Shieh. However, since claims 15 and 16 depend

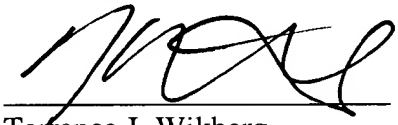
on claim 11, and because Shieh fails to cure the deficient teachings of Kajikawa and Bibby with regard to claim 11, Applicant submits that these claims are also allowable, at least by reason of their dependence.

Conclusion:

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: December 20, 2002

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A tire tread wear forecasting method comprising:

forecasting tire tread wear on a tire based on an increase in temperature of a tread surface part of the tire or based on a temperature of the tread surface part after increasing the temperature of the tread surface part, by causing the tire to come into contact with, and to be run on, a road surface.

11. (Amended) A tire tread wear forecasting apparatus that forecasts the tread wear based on a temperature of a tread surface part of a tire after causing the tire to come in contact with, and to be run on, a road surface, in order to increase the temperature of the tread surface part, said tire tread wear forecasting apparatus comprising:

a tire support that supports the tire so that the tire can rotate;

a road surface that contacts the tire;

means for driving at least one of the tire and~~/or~~ the road surface in order to cause the tire to rotate; and

means for measuring, without contact, the temperature of the tread surface part and for discerning a temperature distribution of the tread surface part from the measured temperature.

19. (Amended) A tire tread wear forecasting apparatus, comprising:

a sensor which senses a temperature of a tire after it is run on a surface for a predetermined period of time, and without the sensor contacting the tire; and

a computer which forecasts tread wear on the tire based on the temperature sensed by said sensor.